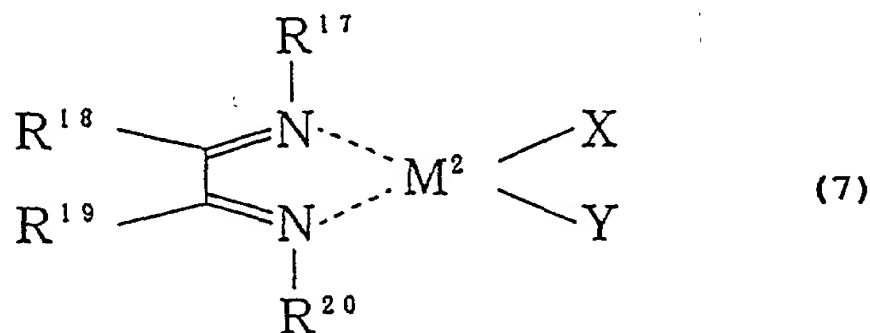


Of those, preferred are halogen atoms and hydrocarbon groups.

X¹ and Y¹ may be the same or different ones. Specific examples of L¹ and L² include triphenylphosphine, acetonitrile, benzonitrile, 1,2-bisdiphenylphosphinoethane, 1,3-bisdiphenylphosphinopropane, 1,1'-bisdiphenylphosphinoferrocene, cyclooctadiene, pyridine, bistrimethylsilylaminobistrimethylsilyliminophosphorane, etc.

L¹, L², X¹ and Y¹ may be bonded to each other to form a cyclic structure.

The compounds of transition metals of Groups 8 to 10 of the Periodic Table preferably have a diimine compound as the ligand, including, for example, complex compounds of a general formula (I-7):



wherein R¹⁷ and R²⁰ each independently represent an aliphatic hydrocarbon group having from 1 to 20 carbon atoms, or an aromatic group having a hydrocarbon group on the ring and having from 7 to 20 carbon atoms in total; R¹⁸ and R¹⁹ each independently represent a hydrogen atom, or a hydrocarbon group having from 1 to 20 carbon atoms, and R¹⁸ and R¹⁹ may be bonded to each other

to form a ring; X and Y each independently represent a hydrogen atom, or a hydrocarbon group having from 1 to 20 carbon atoms; and M^2 represents a transition metal of Groups 8 to 10 of the Periodic Table.

In formula (7), the aliphatic hydrocarbon group having from 1 to 20 carbon atoms for R^{17} and R^{20} may be a linear or branched alkyl group having from 1 to 20 carbon atoms or a cycloalkyl group having from 3 to 20 carbon atoms, concretely including a methyl group, an ethyl group, an n-propyl group, an isopropyl group, an n-butyl group, an isobutyl group, a sec-butyl group, a tert-butyl group, a pentyl group, a hexyl group, an octyl group, a decyl group, a tetradecyl group, a hexadecyl group, an octadecyl group, a cyclopentyl group, a cyclohexyl group, and a cyclooctyl group, etc. Into the ring of the cycloalkyl group, a suitable substituent such as a lower alkyl group or the like may be introduced. The aromatic group having a hydrocarbon group on the ring and having from 7 to 20 carbon atoms in total includes, for example, phenyl and naphthyl groups with at least one linear, branched or cyclic C1-10 alkyl group being on the aromatic ring. For R^{17} and R^{20} , preferred is an aromatic group having a hydrocarbon group on the ring, and especially preferred is a 2,6-diisopropylphenyl group. R^{17} and R^{20} may be the same or different.

The hydrocarbon group having from 1 to 20 carbon atoms for R^{18} and R^{19} includes, for example, a linear or branched alkyl

group having from 1 to 20 carbon atoms, a cycloalkyl group having from 3 to 20 carbon atoms, an aryl group having from 6 to 20 carbon atoms, and an aralkyl group having from 7 to 20 carbon atoms. For examples of the linear or branched alkyl group having from 1 to 20 carbon atoms and the cycloalkyl group having from 3 to 20 carbon atoms for R^{18} and R^{19} , referred to are those of the C1-20 aliphatic hydrocarbon group mentioned hereinabove for R^{17} and R^{20} . The aryl group having from 6 to 20 carbon atoms includes, for example, a phenyl group, a tolyl group, a xylyl group, a naphthyl group, a methylnaphthyl group, etc.; and the aralkyl group having from 7 to 20 carbon atoms includes, for example, a benzyl group, a phenethyl group, etc. R^{17} and R^{18} may be the same or different, and may be bonded to each other to form a ring.

For examples of the hydrocarbon group having from 1 to 20 carbon atoms for X and Y, referred to are those of the C1-20 hydrocarbon group mentioned hereinabove for R^{18} and R^{19} . For X and Y, especially preferred is a methyl group. X and Y may be the same or different.

The transition metal of Groups 8 to 10 of the Periodic Table for M^2 includes, for example, nickel, palladium, platinum, iron, cobalt, rhodium, ruthenium, etc. Preferred are nickel and palladium.

Specific examples of the complex compounds of formula (7) are compounds of the following formulae [1], [2], [3], [4],